

NEW ENGLAND NOTE

GLYCERIA MAXIMA (POACEAE) IN NEW ENGLAND

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Tall Mannagrass, *Glyceria maxima* (Hartman) Holmburg is a stout perennial Eurasian grass found as a native species throughout most of northern Eurasia from the British Isles east to Japan and Kamchatka, albeit absent from the extreme north and most of the southwest of this range. (Tutin et al., 1980; Freckmann and Reed, 1979). Dore and McNeill (1980) provide one of the few keys among North American manuals which distinguishes *G. maxima* from the relatively similar *G. grandis*. They separate *G. maxima* by the length of the lower glume (2-3 mm versus 1.2-1.5 mm in *G. grandis*) and by the ascending and stiff panicle branches and rough sheaths versus nodding panicle branches and smooth sheaths in *G. grandis*. Fernald (1950) also distinguishes *G. maxima*, but under the name *G. spectabilis* Mert. & Koch. The synonymy ascribed to *G. maxima* is thoroughly detailed by Freckmann and Reed (1979).

Glyceria maxima was collected in the United States for the first time in 1975 in Racine County, Wisconsin (*Wilhelm & Schulenberg 2161 MOR*). A second collection located approximately 12 miles east of the first collection in Oak Creek, Milwaukee County, WI was made in 1979. (*Reed s.n. UWSP*). Both collections were reported in 1979 publications (Swink and Wilhelm, 1979; Freckmann and Reed, 1979).

Glyceria maxima has been twice reported erroneously from the United States, Jordal (1951) reported *G. maxima* from near Fairbanks, Alaska, but the specimen (*Jordal 3539, MICH*) is *G. grandis*. More recently, an historical record of this species (as *Glyceria maxima* subsp. *maxima*) from Mattituck, Long Island (*Latham 35967, NYS*) mapped in the Preliminary Vouchered Atlas of New York State Flora (New York Flora Association, 1990) has proven to be a large individual of *G. canadensis* (Gordon Tucker, pers. comm., 1992).

Three populations of *Glyceria maxima* were discovered and mapped by Marc Lapin in 1990 on the Massachusetts Audubon Society's Ipswich River Wildlife Sanctuary in the towns of Topsfield and Wenham, Essex County, Massachusetts (Lapin, 1990).

A fourth population, also in Wenham, was located by Tim Smith in 1993. Voucher specimens were identified by A. A. Reznicek as cited below. Specimens examined: Massachusetts. Essex County: Wenham, Ipswich River Wildlife Sanctuary, Great Wenham Swamp (behind Perkins Island), 23 Jul 1992, *Anderson s.n.* (MICH); Topsfield, Ipswich River Wildlife Sanctuary, Mile Brook Swamp, 6 Aug 1992, *Anderson s.n.* (MICH). An additional voucher from the Wenham site has also been deposited: *Anderson s.n.* October 9, 1992 (NEBC). These collections are the first for New England and represent the third documented occurrence in the United States.

The Wenham population, within a high marsh system of the Great Wenham Swamp, forms a near monoculture of about two-thirds of an acre. There is a dense, but relatively shallow rhizome system reaching about half a meter in depth. Aerial shoots exceed two meters in height. Only a few individuals of *Cephalanthus occidentalis*, *Fraxinus pennsylvanica*, and *Lythrum salicaria* persist within this patch. The grass is also growing in a smaller stand, 6.5 meters square, located roughly 60 meters southeast of the larger Wenham population close to an edge of Perkins Island.

The Topsfield populations both occur within a shrub swamp community along Mile Brook, a tributary of the Ipswich River. The largest of these patches covers 2 acres. A portion of this population exists as a floating mat of individual plants and rhizomes which can be readily dislodged if disturbed. Downstream along the stream channel, a smaller stand measures about 15 meters in diameter. Sampling completed in one section of this swamp in 1990 determined that four non-native species, *Glyceria maxima* (sub *G. septentrionalis*), *Rhamnus frangula*, *Iris pseudacorus*, and *Lythrum salicaria* accounted for 67% of the relative cover within this community. Of these, *G. maxima* was the most prevalent species providing 39% of the relative cover (Anderson, 1991). This larger patch is discernible at least as far back as 1957 on black and white aerial photographs, however, *G. maxima* was not reported for Essex County by Harris (1975).

Dore and McNeill (1980) and Dore (1947) note that the first herbarium specimens of this species in North America were collected from the vicinity of Hamilton, Ontario, Canada in 1943. They also report that the species' distribution in the New World is concentrated primarily in Ontario. Other stands are known from Somenos Lake, British Columbia (*Calder & MacKay 31984*

DAO) and St. Johns and Brigus, Newfoundland (Day, 1991; Rouleau and Lamoureux, 1992). The specimen reported in Scoggan (1978) from northern Alberta has been determined to be *G. grandis* (Susan Aiken, pers. comm., 1992).

Glyceria maxima is a large, aggressive species with the ability to form huge stands in wetlands. Freckmann and Reed (1979) noted that *G. maxima* dominated at least 15 acres of the Oak Creek site in 1979. This invasive tendency has been evident in Ontario over the past fifty years and has been a subject of study in Europe (e.g., Buttery and Lambert, 1964). Even within its native range, the ability of *G. maxima* to create virtual monocultures under varying levels of disturbance is of conservation concern. Burgess et al. (1990) report that the swamp community type dominated by *G. maxima* more than doubled its area in the Ouse Washes, England between 1972 and 1988, largely in response to an overall increase in the incidence of summer flooding. This spread of *G. maxima* has reduced plant species diversity on the site, and as a consequence, reduced the number of seed-producing plants (particularly within the Cyperaceae and Polygonaceae) available to wintering seed-feeding ducks. *G. maxima* is reported to be a poor foodplant for wintering grazing waterfowl and a poor nesting substrate for many common wetland species (Burgess et al., 1990).

The spread of *Glyceria maxima* in the United States should be carefully monitored as it has the potential to be a very serious invader of natural wetlands. Vegetative dispersal is reported from Canada, where 53 separate stands of *G. maxima* were located in one thirteen mile stretch of the Mississippi River in Ontario (Gutteridge, 1954). The reliance on vegetative mechanisms of reproduction and dispersal is also suggested by Dore's (1953) report that only 1 to 9% of the florets set good grains. Further information on the spread of existing North American populations, coupled with additional data on dispersal mechanisms and control methodologies should be gathered before the species becomes thoroughly entrenched.

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